

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference E44705 LA/J	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/NO2005/000456	International filing date (<i>day/month/year</i>) 12-12-2005	Priority date (<i>day/month/year</i>) 16-12-2004
International Patent Classification (IPC) or national classification and IPC See Supplemental Box		
Applicant Easy Well Solutions AS et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☒ (*sent to the applicant and to the International Bureau*) a total of 2 sheets, as follows:

☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (*sent to the International Bureau only*) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

<input checked="" type="checkbox"/>	Box No. I	Basis of the report
<input type="checkbox"/>	Box No. II	Priority
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/>	Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input type="checkbox"/>	Box No. VII	Certain defects in the international application
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application

Date of submission of the demand 29-06-2006	Date of completion of this report 04-12-2006
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer Christer Bäcknert / MRo Telephone No. +46 8 782 25 00

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Cover sheet

International patent classification (IPC)

E21B 33/14 (2006.01)

E21B 33/127 (2006.01)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. I **Basis of the report**1. With regard to the **language**, this report is based on:

the international application in the language in which it was filed

a translation of the international application into _____,
which is the language of a translation furnished for the purposes of:

international search (Rules 12.3(a) and 23.1(b))



publication of the international application (Rule 12.4(a))



international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

the international application as originally filed/furnished



the description:

pages 1 - 6 _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____



the claims:

pages _____ as originally filed/furnished

pages* 1 - 2 _____ as amended (together with any statement) under Article 19

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____



the drawings:

pages 1 - 3 _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____



a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

the description, pages _____



the claims, Nos. _____



the drawings, sheets/figs _____

the sequence listing (*specify*): _____any table(s) related to the sequence listing (*specify*): _____4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

the description, pages _____



the claims, Nos. _____



the drawings, sheets/figs _____

the sequence listing (*specify*): _____any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-12</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-12</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-12</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

D1: US5211238 A
D2: US5402849 A
D3: US5188176 A
D4: US5942031 A
D5: US5476142 A

The cited documents represent the general state of the art.
The invention defined in amended claims 1-12 is not disclosed
by any of these documents.

The cited prior art does not give any indication that would
lead a person skilled in the art to the claimed device and
method for sealing a void incompletely filled with a cast
material. Therefore, the claimed invention is not obvious to a
person skilled in the art.

Accordingly, the invention defined in claims 1-12 is novel and
is considered to involve an inventive step.

The invention is industrially applicable.

AMENDED CLAIMS

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1.

A device for expanding into a cavity (16) in a borehole (2), said cavity (16) being at least partly defined by a casting material (10) disposed in the borehole (2), characterized by an annular element (6) disposed on a tubular element (1) in the borehole and
10 comprising an expandable material capable of extending from a retracted state to an expanded state.

2.

The device of claim 1, wherein the cavity (16) is at least partly defined by the borehole
15 (2) wall.

3.

The device of claim 1, wherein the cavity (16) is at least partly defined by the tubular
20 element (1).

4.

The device of any of claims 1 – 3, wherein the cavity (16) at least partly holds a fluid.

5.

The device of claims 1 and 4, wherein the annular element (6) is adapted to extend from
25 the retracted state to the expanded state as a reaction to exposure to a fluid in the cavity (16).

6.

The device of claim 1, wherein the casting material (10) comprises hardened concrete.
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7.

The device of claim 1, wherein the cavity (16) comprises an elongated channel
substantially defined by the casting material (10), the tubular element (1) and the
35 borehole (2) wall.

8.

A method for providing a barrier in a cavity (16) in a borehole (2), said cavity (16) being at least partly defined by a casting material (10) disposed in the borehole (2), characterized by the steps of:

- 5 - on a tubular element (1), disposing one or more annular elements (6) comprising an expandable material capable of extending from a retracted state to an expanded state;
- extending the tubular element (1) into the borehole;
- providing a casting material (10) into a first volume (12) defined by the borehole (2) wall and the outer surface of said tubular element (1);
- 10 whereby the expandable material may extend into said cavity (16).

9.

The method of claim 8, wherein the annular elements (6) comprise a plurality of elements placed at substantially regular intervals along a length of the tubular element
15 (1).

10.

The method of claim 8, wherein the expandable element (6) is adapted to extend from the retracted state to the expanded state as a reaction to exposure to a fluid in the cavity
20 (16).

11.

The method of claim 8, wherein the expandable material extends into the cavity (16) after the casting material (10) has hardened.
25

12.

The method of claim 8, wherein the cavity (16) comprises an elongated channel substantially defined by the casting material (10), the tubular element (1) and the borehole (2) wall.
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